DOE Public Workshop

Silo 3 Path Forward

May 14, 1997

6:30 P.M.

at the Plantation

MR. STEGNER: I think Don Payne is sort of in transit. There was a mix up in the slides. Welcome to everyone and thank you all for coming. My name is Gary Stegner and I'm with Fernald. By of introduction tonight we realize the OU4 is something of a developing story. We had actually given some thought to either postponing this session in light of some of the recent developments of OU4, however, after consulting with the subcommittees and the citizens task force we thought we would just go ahead and press ahead with this. The Silo 3 which is the subject of tonight's meeting in and of itself has not changed very much. The Silo 3 waste stream is still a unique waste stream and it is one that requires specialists. In fact, the information that we plan to present tonight is essentially process oriented. Primarily we are not going to talk about public involvement process walk through the Silo 3 process, we want to get your feedback on our public involvement proposals and also we want to talk to you about the universe of the practical alternative that we might look at in regard to Silo 3. So in a few minutes, Terry Hagen will walk you through, essentially what we want to do and why

and what we would propose to be our public involvement strategy before Silo 3 and following this presentation or during this presentation we certainly will want your comments on public involvement proposal that we are going to present. Following Terry, Don Paine presumably will introduce what we see as the practical universe Silo 3 waste. We want to emphasize that this is the first in a series of public involvement formats that we are having for Silo 3 and speaking of workshops and public involvements, I also want to let you guys know that last week I sent a delegation from Fernald to Nevada to dialogue with the site specific advisory board from Nevada. Their citizens advisory board out there and also to discuss Silo 3 issues with the personnel from the Nevada test site. We were very well received out there and one of the things that they did ask for and we did agree to is, which will make for a very interesting summer is that they ask every public involvement opportunity that we provide to you, they would also like the same public involvement form provided to them. So this forum will be presented to Nevada stakeholders on the 3rd of June which for you history buffs, is the day that Billy Jo McAlister jumped off the Talahassee Bridge.

Now, let me back up a little bit and you see

the agenda up there tonight but procedures for tonight will be, we've got about two hours here and probably an hour of presentation and more or less an hour or question and answer type of thing. The drill this evening will be very similar to A1 topic community meeting. You will see that we do have a court reporter here tonight so we will have a complete record of what was said so when you introduce or when you do speak, please introduce yourself for the record. There is a number of handouts on your chair so also there is a listing I think of documents in the PEIC regarding _____ specific to Silo 3. There is also in your handouts the counter of public involvement opportunities and you can see that there is going to be a pretty busy summer. As I said, we will take questions at the end of each presentation. I think that's the best way to do it to get through things. Yes ma'am?

UNIDENTIFIED LADY: What is CPNT meeting under May 21?

ANOTHER UNIDENTIFIED LADY: Cooperative training and planned training committee, that's a group primarily those are response type people that we meet with on a monthly basis.

MR. STEGNER: As I said the focus tonight

is on Silo 3 so try to keep a focus on Silo 3 as much as you possibly can, that's what we prepared to discuss and that's what we are going to talk about tonight, however this is public forum and during the question and answer period we will try to answer any questions you might have on anything, but OU4 in particular and if we cannot provide you with an immediate response, we will get back to you in one form or another within 48 hours. Before Terry makes his presentation I would like you to know also that representatives from the regulators are here tonight, USEPA and Ohio EPA and anytime you guys feel like it, just jump right in if you want to do that, and again, it is two hours tonight and it has been our drill we try to end promptly. We will stay around however, as long as you guys want to and discuss any aspect of Silo 3 and/or OU4 or clean up. So generally with that, Terry?

MR. HAGEN: Is this on, can you hear me back there? I want to take the next twenty minutes or half an hour or so and talk about where we are at on silo 3 and potentially where we can go together. We've been talking about silo 3 for a while and I don't think you will get any argument from us since last August it hasn't went very well and has not been

handled particularly well and we would like to start over and go back and lay out a public involvement process and get your thoughts on how we can come to a concensus of where we are going and let that be our focus and then once we've done that actually get into some of the technical details of maybe how we can go about treating silo 3. I really see three main objectives tonight. At the risk of repeating what Gary said. The first one is why do we think it makes sense to go ahead and move forward and consider at this time some treatment alternatives for Silo 3. Number 2 we talked about and I said in the beginning what process could we work together to come to alignment on what treatment technology is appropriate for Silo 3 for performance requirements or would be appropriate for Silo 3 and those are the main two objectives and then depending on how that goes, it we seem to be feeling good about what we decided together on what the process would be, we would like to go ahead and get into some of the details on starting or introducing an evaluation of various treatment technologies that would potentially apply.

I said I wanted to start over, if you will. Obviously we have been here talking and things have happened to Silo 3 so maybe the first thing I would

like to do in the start over mode is to talk about where we are at on Silo 3. The task force has had some specific recommendations related to Silo 3. I'm not talking about last Saturday, but the meeting before that as you recall the task force recommended that Silo 3 treatment be separated from 1 and 2 and that we work with the public together to come to a concensus of what is the appropriate treatment technology for silo 3 and not specifying what that might be and that is one piece of information or data piece that we've got right now. We have been talking with the regulation for quite a while about Silo 3 and I think we've got a concensus, in fact, there was a position paper handed out a couple of task force meetings ago about that that because of some specific characteristics of Silo 3 as it relates to the implemental ability of vitrification and Don will get into that a little bit, that it is probably appropriate to star to evaluate alternative treatment technologies. Again, in that process, we have not decided what that is going to be and I wanted to clarify something and this definitely is in the start over mode. We put out something called an alternative 3 treatment evaluation report and in that we looked at vitrification and compared it to solidification and

one of the things that comes back from the public is a concern we are not looking a broad enough range of alternatives and we're going to step back and start over tonight. So, what does that mean for that document. We want to put that on the shelf. We agreed with the regulators and as you spoke to them and got the discussion started with them as to maybe where we need to go in a viable alternative but the main point on that one is it is not going to support a decision right now in the future or whatever and I think Jim and Tom agree with that. In the independent review team's recommendation specific to Silo 3 as everyone know, I believe there was a majority report and a minority report and the difference really on the recommendation to the operable unit as a whole and in particular Silos 1 and 2 but the one comment on them among both the majority and the minority report was related to Silo 3 and that was a recommendation separated out to the treatment of Unit 1 and 2 and to pursue a stabilization technology and then finally this is late breaking, we talked about it at the waste management committee meeting at the task force last Wednesday, the army corp of engineers was asked by Al Long to come in and give some advice, recommendation related to the path forward on Operable Unit 4. There

is a draft report that is out and it has been reviewed by Collins and _____. It is not finalized yet, but it summarizes in there what is related to Silo 3. There is a recommendation also to separate that out any treatment of Silos 1 and 2 and pursue a cement solidification technology. So, those are some things, not that any of those are the right or wrong answers but that is kind of what we would like to set as ground zero in the starting over process.

Before I jump into this last bullet then what I would like to do is take a couple of minutes and talk about why does DOE and I believe the regulators think that it might make sense to move forward right now together in evaluating alternative treatment technologies or as you are going to find out tonight, we will start with the vitrification still on the table, let's just say evaluate the treatment alternative for Silo 3 now as opposed to some point in the future and there will be, I'm going to say 5 points that I would like to make.

1. Silos 3 is not Silos 1 and 2. It does not demonstrate the same degree of risk. We are not trying to suggest that, but it is still among the highest remedial priority among the site, that being identified by fresh, the regulators and other groups

and by moving forward right now we estimate we can save at least one year, probably more on the schedule to actually get that waste moved out of there and off site. So, in a way, that is the biggest question in our eyes and we think we are in a position to actually move forward together with you and decide what we are going to do to treat that stuff and get it out of there and by moving forward now, under the regulatory mechanisms that we are going to talk about in a little bit, we think that will save at least a year.

The second one is it shows progress upon an important priority. I know that sounds like the same thing I just said and it kind of is but I think particularly the people in Fresh that lobby in Washington on behalf on --

UNIDENTIFIED LADY: We don't lobby, we just visit.

MR. HAGEN: Sorry, visit, talk about stuff educating, if you look at what has happened over the last several years, it seems that the more progress we can show on site against real priorities, the better hand we've got to DOE headquarters and congress in the education business so that is No. 2.

3. This has to do with the, I'm going to call it the cost of money. For those of you who have been

involved in some of our discussions about the baseline, you have heard the term escalation and for the financial folks in here, I'm sure I'm going to screw this up but I think in terms of inflation that the longer it takes you to do a project and the more inflation can catch up with you and the cost of money can catch up with you and the government estimates escalation typically around 3% a year so by every year that we delay completing Silo 3, we estimate that is about $750,000 in additional costs per year that we are in turn not able to put towards some other remedial priority. Also, well, let me put one in front of this and save this, the other for last of the 5. I know there is some concern about if we move forward with Silo 3, are we diverting resources whether that is money or people or whatever, away from the higher risk priorities of Silos 1 and 2 and I know what DOE's position is on this and I'm pretty sure I know what Jim and Tom's position is on this and that is that OE4's as a whole is the top priority on the site. In other words, we will find it to the extent that we need to move forward as fast as we can together legitimately on Silos 1 and 2 and Silo 3. In other words, if something has to give because we are moving forward on Silo 3 right now, it is not DOE's

position, but what gives is Silos 1 and 2 and that will be somewhere else so I know that was a particular concern of other people so if anybody from DOE wants to jump in on that. It is not going to delay 1 and 2 and I think I can pass that commitment on and finally to get going, right now we have about $10.9 million in special funds earmarked in FY98 for the Silo 3 process. If we don't move forward now and let's say, attach that to a different process, a Rod Mod process for the operable unit as a whole, how is it probably going to do to get us outside the window and to commit to those funds in 98? It does not mean that we will not move forward in Silo 3 but, you know, it does mean we will have to pull back $10.9 million down with the rest of the -- site work and it is something else that we would like to get done so, those are really the five reasons why we think it makes sense to move forward now and if you think about those things and if you have any questions, hit me with them and if you get anything over the weeks, we are not trying to say this is the only reason that makes any sense or, but that is why we are here tonight, trying to move forward. Okay, that was the first of my three objectives.

The second one was going back and starting

over on public involvement process and something that has to work this time. I personally would kind of group the public involvement process or Silo 3 in about two, three or four different phases. The first one is what we would like to kick off tonight and that is that the process where you all would go back to ground zero and look at all of the potential treatment technology that would apply to Silo 3 and eventually come to the concensus on a treatment technology and/or performance criteria that we've going to use to treat Silo 3. That is the first thing we want to do and that is what we are going to talk about, a little bit about here in the next slide.

The second one is, okay, once we come to an agreement together on what technology or performance requirement that we want to use, let's presume it is not vitrification and we are not suggesting that, that we are going to, back to ground zero. It's going to require some type of modification, you're right. And the second thing we're going to talk about tonight is what process are we supposed to use and specifically how are we going to practically address public involvement during that regulatory process. A third part of it is okay, we've come to an agreement on what we're going to do, we have the regulatory mechanism

taken care of. The next part is getting someone in here to do the work, a vendor to come in and do the work. We have had specific interest expressed by stakeholders that are involved in that process and we will talk about that a little bit later. And then the fourth part, which I'm not going to talk about tonight but when we get to that stage of the project we will is when we've actually got a vendor in here and they are starting to design the process and immobilize and get the project up and running. We are going to maintain to DOE and the commitment of keeping involved in the design and the remedial action task of a project but we will not focus on that tonight because we've got first things first.

Okay, first OU4. Come into an agreement together on what treatment technology and/or performance requirements we're going to require for the Silo 3. What we want to do is basically use a process that we would like to propose to you, a process that we think will work together already successfully and that is basically the FS process and what I want to do from this point in focusing with this slide but hopefully for the rest of my little speel is always define what we're going to do from right now forward and what we do during the FS stage

of the process and whether it will work and number one and I think it is something we are comfortable with, familiarity or whatever. Having said that, the first thing that we've got to do is decide what do we have to achieve with treatment of Silo 3 materials? If you go back to the FS stage, one of the very first things that you do is establish remedial action and Don is going to cover right at the very beginning of this presentation, is going to be a renumeration of the things that we talked about before but again, I think we want to go through this process and be logical from start to finish action. What are we trying to do, what do we have to achieve in treatment of Silo 3. If you can't start deciding on the treatment technology our family of technologies is going to cut the mustard until you understand what you've got to do with it. Again, Don will talk about that tonight. That's one of our objectives for introducing the technical evaluation process.

The next thing we did at the FS stage as you recall, if once we have decided what our remedial action objectives are, you got a whole bundle of potential treatment technologies and families of technologies that most of which are not going to be applicable for one reason or another. In the FS, what

we did with the big bunch to get it down to the manageable group of alternative so that we can evaluate the retail and screening using three criteria; implementability, effectiveness and cost and that is what we would also like to start to do tonight. Let me talk a little bit about the objectives of Don's presentation, because it is going to put a lot of information in front of you. When we were in the FS stage, at least we'll start with 1, whichever one works for you, all right? We really did not focus on screening out of this big bunch of technologies. We went ahead and identified some preliminary alternatives and then we screened those and while that stage was documented in the FS, it was not something that we covered in the public involvement process and I think given the concern that was artificial and I went to the one technology and we will want to start tonight from the first stage of the process so Don is going to throw out about sixteen technologies that have been identified in the EPA guidelines as potentially applicable with this type of voice -- and he is going to give our thoughts on costs, implementability and effectiveness issues and the objective here is if you agree with these at the end of the night that is great, but that is not a

requirement for this meeting. It is for me to introduce to you what our ideas of those are and we are also going to go ahead and say based on these ideas of implementability, effectiveness and cost here is what we think makes sense to look at in detail and get it down to a manageable number of alternatives, just what we did in the FS. Two points, again, you are going to see a lot of information in front of you tonight. It is not our expectation that you digest that, agree with everything that you see. If you do, that is great. We want you to think about those things and draw your own conclusion and if you get to the end of this and decide there is one or two you want to stick back into the list for more detailed evaluation and you think one of the ones that we carry forward does not make sense, we will be talking about that and only purpose our time in a detailed evaluation sense on what we agreed together and makes sense as to how to spend our time on this. It is our expectation that we will get rid of most of the 16 or 17 and get it down to 3 or 4 or whatever and then go to the next stage of the process which will be more detailed evaluation and again to draw my painful analogy to the FS, that is what came next. Once we had screened it down to the manageable group of

alternative we went to a detailed analysis using the circle _____ criteria. That is what we would suggest that you do next year. Now, to support that, let me bring in the notion, we used the term cement 101 to support this, not tonight now, but once we agree what is going to be the group of few, 5, whatever it is that we are going to look at in detail -- we think step 1 is to go through a more detailed education process together. That is where cement 101, as cement 101 makes it and we expect others to make it too and we will go through the same education process and support of that as we did for cement and let that support an application and non-criteria. If you remember back to the FS stage, that evaluation against the 9 criteria is what really kicked out our concensus ideas of what technology or alternative would be a better way to say it and that is what we want to do at this process, make it look like something we have done before. We want to do a series of workshops. To do that, the first of which is tonight. We talked a little bit about what Don is going to try to achieve and that is what is our starting point of the universe and potential alternative, get our thoughts as to how maybe we can change it down to a smaller bunch and we'll let you chew on that a little bit and see if you

can agree if you want more on or want some off and if you have any questions, etc. and it would be our expectation, by the way, you don't have to do that, that is fine but it is our expectation that there are going to be questions and before we really get to the next formal workshop we will have a one-on-one with anybody that wants it to answer questions that may come up tonight in the presentation and etc. so we can effectively do the next workshop and what we really see happening in the next workshop is that education process. Let's suppose OU3 we can look at in detail or whatever. We are going to have you come in and basically that is where the cement 101 comes in, if you want to use that as we talked about before the capsulation 101 or whatever that is and also in that same meeting we will introduce our thoughts on how exact the 9 criteria and let you go chew on that a little bit and then have a follow up workshop to see if we are near a consensus and if we are getting there, that is great. If we need to take more time, that is fine, too. I am going to talk a little bit about some goals that we have for timing and why those goals are in existence but the one thing DOE wants to emphasize is that we're going to work through this together and we will go as quickly as we can, but

we're not going to stick anything down your throat so if we've got to take extra time in a 101 session so that you are getting the information, that's what we're going to do. Hopefully at the end of this process we're in agreement together as to what technology or performance requirement we will use to treat the Silo 3 waste. If one were to assume it is not vitrification which is in the current record of decision, we may have to modify the rod and what we are proposing to do is and I use the word modify twice in a row, is modify an explanation of significant different processes and Jim introduced on Saturday at the task force meeting why he felt that it was within EPA guidance to move forward under Silo 3 using the explanation of significant difference process. Real quickly, let me try to talk about what are the differences between the rod process versus the ESD process and once you see those, why do we feel it is necessary to modify and bring some public involvement in there that is not otherwise required by the ESD.

Basically the rod amendment process is going to look like what we would call the original FS phase. We're going to do a revised FS and proposed plan and that will come out for a public hearing in there and at the conclusion of that deal we will develop a draft

record of decision or an amended record or decision inclusive of a responsiveness summary, a response in writing that all of the comments received from the public on the proposed plan. That is kind of in a nutshell how the amendment to the rod process works and it is participated by what is called a fundamental change of the rod and again, Jim went to that on Saturday and he is the guy to talk to during the questions about that process. If what is termed a significant change but not a fundamental change to the remedy, then basically what the required process, not what we will do here, we will go above and beyond that, but the required process is to develop the explanation of significant difference documents to say what's changing and why and all we have to do legally is give public notice. That is not what we're going to do here. What we're going to do with the ESD, presuming it's not vitrification is No. 1 talk about why are we no longer going to vitrify solid treatment materials. Once that is set up, what we want to do is basically document the public process that we went through with Phase 1. How do we come to the consensus on a particular treatment technology and/or performance requirement. We're going to put on paper what we went through on the overhead that we just

talked about, okay. We will go through the review cycle with EPA just like we did with the written document and put that out for an identified public comment. This is before the ESD is signed, before anything is finalized and DOE is committing to response to those comments in writing. In other words, to do the exact same thing we do on the rod, put it in what is in essence a response to the summary so that we've got an agreement on the response to those documents before the ESD is finalized. What is the advantage to that is that we're going to go ahead and throw this other public comment requirement in that to basically what is the same as the rod amendment. It is time. It is the amount of documentation and review cycle, difference between the ESD process versus the rod amendment process will be at least a year so what we will have to try to do is if as Jim as presented, looking at something different for Silo 3 can be done under the scope of the ESD and we want to take advantage of the time difference without sacrificing any of the public involvement which is why we are proposing to use the ESD process but we're going to modify and focus on the more enhanced public involvement process.

Okay, got that hopefully, rod modified to

reflect whatever it is we're going to do together and the next stage of the process is to get a turn key subcontractor in here to actually do the work, someone we approve in expertise in whatever technology we're going to select them. You have expressed interest in being involved in that process. What we're going to do, that's going to require the DOE to develop a request for proposal, to go out and formally solicit vendors to bid on the process. What we're going to do is while we are developing that draft RFP, we will commit to interaction in whatever form you guys decide appropriate, whether it is this type of workshop, one-on-one or whatever to let you know where we think we are going in the draft, no. 1 and then when the draft RFP is developed and I think we will be principally talking about the statement of work is really what is here, the technical rubber meets the road in these things. When it is still at the draft stage, we will put that out for a public and vendor review. That does not obligate anybody to anything and again similar to the ESD process, the DOE will submit to your responding comments in writing before a final RFP goes out on the street and that fits our vendors in here and sets up phase 4 of the public involvement process. When we get there we will focus on that but

let's get this work done successfully first.

Okay, let me emphasize something that I said before, we have a goal to move forward as quickly as we can in agreement together because of the five advantages that I laid out and I want to emphasize though on the DOE's commitment to take this process as quickly or as slowly as we need to to be in alignment together so, what I want you to view is this approximate time line as a goal and the driver behind the goal is we would like to have a turn key subcontractor to procure during the fiscal year 1988. That sets up all five advantages that I laid out including No. 5 on my list of not jeopardizing the $10.9 million that has been currently identified. Even if that were to go away though it does not change what we think are the other four advantages so our goal again is to let that contract bring a turn key subcontractor in here no later than the end of next fiscal year and that sets up this approximate time line and this is not set in stone. We are going to be talking with Jim about a required schedule through the dispute process but we are throwing this out as an idea. This approximate time line is basically consistent with being able to let that contract in the next fiscal year to get it done. If it takes longer

than that, we will do it. Okay. That is my part of the show, any questions?

MS. DUNN: Do you have any idea on a meeting, is there a way we can schedule --

MR. HAGEN: Yes, in fact, am I getting ahead of myself to say that we can probably talk about the June meeting tonight?

MS. STEGNER: Yes, we can work out a date this evening if you want to.

MS. DUNN: I want to make sure I understand by October 1, is that what you mean --

MS. HAGEN: October 1, 1997, to let the contract, is that we're talking about, to let the contract and bring in the contract which means we would have already worked together on what we're going to do. We would have already worked through the modification of the rod and we would have already worked through the draft RFP looks and let that play out and get the vendor on the contract, that is what I mean. Our goal is to have that done no later than the end of the year, fiscal year 98 which is September 30.

MS. DUNN: If I look at this, look at this time line here, it looks like we're going to try and get through all of the comments and the RFP ready

to roll by the end of the fall of this year.

MR. HAGEN: Certainly what we would like to do is have the draft out. The answer is yes. We have a little bit of float in that to make it to October, but not much, is that right, Karen? We certainly would like to do is have the draft RFP out to you in fall of this year and whether that is September of October, we can talk about it at a subsequent session, but circumstances, that is the general time line which we have to get the draft out to you if we want to observe that goal, which is a goal.

MR. STEGNER: I want to go ahead and bring Don up and following that, we will have a question and answer session. Don Paine?

MR. PAINE: What we're going to talk about tonight is the different technology and presence that may be applicable for the Silo 3 and we'll start out by using, since there is a wide variety of people in there, I'm not sure -- we'll talk a little bit about Silo 3, what Silo 3 is and why we are really stabilizing to start with and then go through the technology that we think are considered to do that.

Silo 3 is one of three silos that we have out in the area that have material that we have to

stabilize prior to shipping and disposing. With Silo 3 there is much difference than Silos 1 and 2. We are not going into Silos 1 and 2. Essentially we have a large volume of it, we have like 5,000 cubic square yards and if you can't really visualize that much, you can think of it in excess of about 20,000 of those podiums, is that we're talking about, the amount of material that we have to stabilize and ship off site for disposal. The primary reason that we are stabilizing material in the first place is because we have characteristic metals when we do the bleaching procedures and stuff exceed our regulatory requirements to go to ground with this type of material. The chromium, selenium, cadmium and arsenic and one of the advantages that we have with Silo 3, if you look at the concentration levels, they are all very close to what the regulatory limits are. It's not the case where we have an order or magnitude and a greater type of concentration which will make it a very difficult kind of a process to stabilize so that is a big advantage. From a very logical standpoint the primary thing we are concerned about is the thorium. We have a lot of thorium - 230 in this particular type of material. Thorium 230 is a kind of unique in the aspect that there is an alpha emitter

and you have a lot of external -- and we have people who are very careful and you have to be concerned about people to be very careful when you walk through the process during the fact of treating and packing and that type of thing and it is in excess of that and that is kind of what we are trying to do in Silo 3 and what it is.

What I would like to talk about is what we really like to see in a waste form out of Silo 3. One thing we would like to see is the cadmium, selenium, the chromium and the things that were really stabilizing in the waste land. We would like to see that chemically fouled up, such that the elements themselves are in some sort of insoluble form and not having to really rely on waste matrix that happens to be transported in those soluble forms. So, the ideal situation you would have is some sort of chemical compilation of those kinds of things except that for some reason, whatever is encapsulated in or solidified in, that that some how was a breakdown and the material is still insoluble and not as mobile as it might be. Again, we want it physically found. We have a solid waste that has to go back to the ground. We want the material type that has dispersability issues that we talked about and we want the solid

form. Again, it has to pass the pre-liquid criteria that we have and it has to pass what we call the _____. So it has to be very dry when it goes and we also want to have different concentrations at a level that we can dispose of at the criteria and a required or whatever disposal sites that this material finally goes to.

Two of the options that we currently have are _____ site and _____ site if we receive this type of material so that is basically what we would like to see in the waste form.

What we have done, there has been a lot of interest from a variety of different members of the committee and stuff and for what is really out there, you know, the process we were going through for the vitrifying this material and we talked about that a little bit as to what some of the issues are associated with vitrifying but, what else is out there? In the blank process, when it was done, there was two technologies as that were carried forward and would these be acceptable to this particular material, one would be wit vitrification and the other was a cement type stabilization process. Given the fact that there has been some major faux pas associated with this aging process within the cab and then were

was something concerned, is that really a good waste form that we want to go through that and so, what were some of the reasons that they have problems with that table and we want to talk about that. So, we've been out there you know, searching the literature and talking to a variety of different vendors, everything else to find out since the riffus was done, what technology had you further developed that might be applicable to the Silo 3 material? You look at the EPA -- some of the EPA guidance documents associated with what kind of process would be applicable to this in a general sense, not a specific kind of process, we look at physical process or chemical process or solidification or stabilization which cement stabilization falls in, it would certainly be applicable to the type of material in Silo 3 and another one that is suggested and talked about is extraction. There is nothing in there that really wants extraction solid extraction is very costly and that's what Fernald is all about and probably always will be, definitely block the secondary screen to require somebody behind the stabilization process. That will take care of it, so we don't really think the solid attraction is the category that you would want to be in with the Silo 3 material.

A chemical reduction and oxidation by itself, we don't think it is applicable, but I want to point out there is a lot of the chemical fixation, all kinds of process that fall into this category are utilized in this solidification stabilization and technologies to really survive the chemical fixation that you want to see or some of the elements that we have so by itself it is not bad but it is interesting some of the other stabilizations that we're going to talk about tonight. The thermal processes, there's one called the high temperature thermal desorption, what that is is what we've always done with Silo 3 waste. It was a liquidated waste stream, secondary waste stream out of the process we did at Fernald and what we did was fire that material at 600 degrees C and that is what this process -- we have treated the waste with this particular process. And, we did it with some advantage with reduction in leachability and admobility and some of the constituents that we had in there. But, unfortunately not to the stand where we could go ahead and pass the irregularities that we need so to do this process again, would not be very beneficial to us. We have done that and we have had some success with it, but it is certainly not the final treatment thing that is going to be there.

Vitrification is what the current rod is in Silo 3. Now, the problem that we have with the Silo 3 material is the high sulphate concentration. The problem with glass is it doesn't like sulphur. It just doesn't like sulphur. You have to get the sulphate out. The way we do that in vitrification is what we did when we drive them off into the gases and treat the sulphur downstream in the off gas system. Gas, like about half to one percent sulphate, it will handle that pretty nicely. If you get up above that, you start getting devitrification and stuff, so you have to get rid of that material and Silo 3 has an access of about 17 years sulphate. Now on the original idea we had the originally going down with the vitrification process and we were going to blend Silo 3 with Silos 1 and 2 which allows us to get down to the sulphate concentration, down around the 4% level. Again, the 4% level is still challenging itself but at 17% level it is very difficult. There has been suggestions that we may dilute it but 5,000 cubic yards of material to get the sulphate concentration down is quite a bit and you cannot do that and if you did that there would not be any reason to vitrify it in the first place. Really, the concentration we are seeing is there, but that is kind of it right there.

The other one is the simple one where you just take it out of the Silo and go to the ground. That is not applicable for us and we have those characteristics material that are in there and that is not available for us so, the one we're going to talk about primarily tonight is what those particular technologies that fit into the solidification and stabilization areas and what is available for us out there. If we go back just a little bit and take a look at the result of what we did, now, I will put up here the RI/FS an the IRT. When we had the IRT, we had a panel of experts in and we wanted to see what they're, based on the experience that they had you know, what really was out there and available. Righ now, these are the one that we think are out there that have some potential ability. That does not mean that they're all good, but these are the ones that are out there right now that would be considered potential associated with what we're going to do with Silo 3. We will walk through each one of these briefly, we are not going to go through everything that's on the slide but kind of point out some of the positives and some of the negatives and tell you which one we think probably warrants going forward with and providing more detail to everybody as to what these particular

processes are.

Now, Terry talked a little bit about it, what that screening process is and if we look at how we did the original screening RI/FS process, we look at 3 major categories, one the effectiveness and implementability and costs and for those of you who don't know what are in this category, I have put some of the details and kinds of things and as we go through the process and evaluate those things, any questions that you want to ask, you're going to want to know about the processes and before we go further and really get confident that we can really put something in the field that we think the environment needs to get rid of it.

Now, the first one we will talk about is the asphalt stabilization. This one brings back old memories. I remember back in the mid 70's when I was working at the Department of Energy and the American Environmental Department of Stabilization of low level radioactive waste, this one was very popular back in the 70's. It was used a lot in Europe and that kind of thing and everybody kind of jumped on it and thought well, this is going to be something we need to do but the only problem with the asphalt thing, this was prior to when we had the mixed waste issue. You

remember the mixed waste in those days, when we were looking for findings stable forms to put this stuff to ground with. The problem with asphalt is it's a very porous waste form. It actually absorbs water and swells. It will actually burn without the presence of oxygen and it, those kind of things and it really relies on whatever container or that type of thing that you put in with it. So, from that standpoint, we really don't think it is one that is out there on the forefront that we want to jump on and go with, but it is one that is out there and considering this is the one that we would bring up relatively quickly and just because of the things that I have mentioned earlier right now. It is a plastic, it falls in the thermal plastic category which is polymerization which we will be talking about in a little bit. Now, what happened as a result of that when we were doing those earlier studies and developings, this is when a lot of the cement stabilization solidification things really started getting developed and taking off and I want to point out there is no single process associated with this. There is a wide variety of processes and chemical fixations and those kinds of things that people are going to propose and so it is not just one little, a lot of times people think it is cement and

whatever, that is not the case. There is a wide variety of different additives and things that are utilized. It is the most widely used and the one most developed over the last 15-20 years. We are dealing with radioactive mixed waste and hazardous waste itself. From that standpoint it has the larger sinder base and so from that standpoint we think it is one that certainly we would want to reconsider in looking at.

We have done some treatability work in RI/FS and said it was acceptable and we have about 20% volume increase in that. We have done some treatability work with the material in just this last year and so to reverify that we had in the RI/FS and that is, you will see, that is the down side of the cementation process. You do get some volume and that is why a lot of people don't like it a lot but that is the down side of it.

Another one that has been on the table for quite a lot of years and finally starting to get to the commercial thing is polymer encapsulation and this is the technology that some think we should look into and take a look at it. It's a plastic and some of the plastic process, it's like the asphalt stuff, but it does not have the deficiencies that the asphalt will

have. The process of forming it, you form a very highly corrosion resistant type of kind of waste. You use a polyethylene instead of a bitumen in this thing and they handle it. Environ Care right now is commercializing it. It will have a facility there and treating certain small volume specialty kind of waste in this particular process and it will be like a 55 gallon drum kind of a phase. The problem you would have is this particular technology would be just scaled up. You would have a process that is going to deal with a lot of waste but certainly it is a nice waste form, very nonpermeable kind of waste form. It is primarily an encapsulation type process and you can add some chemicals and treat some of the waste either before or during the process and provide a very durable waste form at the end.

This is one called sulfur/polymer encapsulation or commonly called sulfur/polymer cement and really not considered cement involved in thermal plastic area, but this is the benefit of the two we just talked about. It is compared to the cement type of process and also the benefit of the polymer process. Originally it was a cement that was developed for the botanical industry where they were using a lot of very corrosive acids and those types of

areas, the concrete dike areas and those kinds of thing which would get eaten away and everything else. They developed this with a cement type of formula which they add a lot of sulphur to these kinds of things and then they throw in the polymer and reduce the curiosity and this is a very highly durable and very acid resistant kind of waste thing and that is the one big benefit of sulfur. It is very resistant. This has been commercialized. There is a unit at the S&G where they utilized it for the incinerator ash and again, on a smaller scale similar to what is going to be put in place for a polymer one but it has been removed out of the developmental out or scaled laboratory type situation and it is available for a commercial standpoint so this is one of the things that warrants being taken forward. The down side is it's the kind that you have to deal with the sulphur, it happens to be a very dry process. You have to maintain temperatures throughout the process including the container that you are putting it in. It's not very operator friendly, it requires a computerized process control system to maintain those temperatures and those things throughout the process. But, it certainly would provide a very durable and very corrosion resistant material.

UNIDENTIFIED MAN: Just a question, you've got sulphur in your silo already, isn't there some way you can use that as opposed to introducing more sulphur?

MR. PAINE: That is why I'm saying this would be applicable for that. On a general concept that cement doesn't like sulphur, this is kind of a contrary thing to use sulphur to make a nice durable waste form. There are detergent, certain cement kinds of things that don't like sulphur. There is a wide variety of things that do. Again, that's exactly why we think it may be a good idea to take another look at this one. Again, it has been commercially taken out of the laboratory and commercialized.

Ceramics, almost everybody has taken a ceramics class or made pottery, that is basically what this process is. It is not any more difficult than that to take your material and mix it up and fire it in a kiln or put it into a mold and fire it in a kiln you would have the same thing. The problem is with that it is not very useful really from the standpoint of dealing with a lot of real large waste volume but they have been really innovative with the ceramic where you can find ways and eliminate the kiln and the furnace and typical ways is mixing it with magnesium

and phosphate. The nice thing about phosphates is they provide a nice chemical fixation of the metals that we're concerned about. We're getting extra thermic reaction with that which gives you a nice ceramic kind of matrix which is very much similar to what we will see with a polymers. The problem with this one it has not been commercialized yet. It is still in kind of a development stage. It is starting to take it into the commercialized effect but it would suffer somewhat from the fact that it is still in the developmental stage and has not been taken forward on that, but is still a nice waste form.

In the earlier developments they used phosphoric acid with this thing and that produced a very violent reaction associated with that and we got away from using phosphoric acid and we use all the different types of phosphate and we got around that.

Metal matrix or ceramet is one that is out there, actually the factors that we had in the melter itself, this is the process that the refractor is made. You essentially take aluminum, a metal, such as aluminum like we did and we have a refractor and we mix it with the last form of waste and you form a baret, that type of thing. It's an interesting concept. We're not aware that anyone has utilized it

or this particular process but it is the technology that is out there and being looked at and being developed but it's not -- we think it is way early in the developmental stage and probably not one that we really will carry forward and screen out at this particular time but it is an interesting concept.

Moulton metal technology, that is another one. We have used a moulton metal technology when we have recycled the metal and those types of things. We certainly think from that standpoint it has merit. We are not aware of any really processing facility for utilizing the waste in a sense that we are doing that and we're familiar from that standpoint. We don't see a lot of advantages, we see the same sort of difficulty if not more so with this particular technology than we would see with the vitrification concept. You got a large -- there are three phases, you hit the off gases that you have to treat, you get a metal matrix, unfortunately there are a lot of things that are in our waste that form slag and that may require some additional kinds of treatments. This is probably not a process that we would consider very applicable to the Silo 3 material. Pam?

MS. DUNN: What are SONCO?

MR. PAINE: Those are the gases that come

off SO2 and SO3 -- no, it is sulphur, phosphate and carbonate. You know the big volume reduction that I get for you in vitrification, those are the things that I am taking out of the waste and getting out of it. That is where you get your volume from, the environmental stage and turn it in to gas any way you go. That's the big plus. Here you drive those off and theoretically you get some sort of volume reduction with this.

This is one that we found that nobody talks about really and that is the Phoenix Ash Technology. I finally found out why it is called Phoenix Ash because it is a fly ash that is taken from a reactor in Phoenix. That's why they call it that. This is just a typical cement like stabilization solidification type of a process. That's really all it is. I don't really see much advantage to it. It is very -- it only has one vendor I think that will provide the equipment for those kinds of things. So we don't really see this one as the one right now at this stage that will have any real benefit but at least it is out there and something that we are developing with, but we don't see any real advantages with that one.

There is another one, thermal setting epoxy

resins. This is a lot like the plastic that we were talking about, polarization. The only difference is we don't have to melt the material. You just add the dry additives and those kinds of things. You don't have to have the high temperatures to go ahead and provide the process. Again, it is developmental technology so not commercially available. It requires a lot of development and strictly encapsulation type of process to see if we can carry it forward and really pass the leachability requirements that we have to do. Gene?

UNIDENTIFIED MAN NAMED GENE: The thermal aspect of that is what you get when you take the two things, the epoxy and mix it together --

MR. PAINE: Exactly that is what it is. You've got it. That's the process.

This is another one that's out there, it is called ceramic silicon foam. We used it at Chernoble. It's pre-developed. I'm not saying that we need to carry it forward. We are truly not at the Chernoble phase right now. Or that desperate for technology but this is one that is out there and primarily used to fill voids and those kinds of things and can be used at the micro level but primarily at the micro encapsulation kind of a process. The dimenthal

silicon is pretty nasty stuff all by itself and we think that it really has little or no application to the Silo 3 material. The other one out there is macro encapsulation. Macro encapsulation is just what it says, it is, you know, a larger scale kind of thing. Primarily it is used for things that you know, what we're trying to do is get the Silo 3 material uniformally mixed within a matrix and chemically fixed nicely and things because it tends to be used for this. This process is usually used on large discrete objects or something where you can't really do that. You can't size reduce the material or anything else. They are proposing this for like a melter that they are abandoningly using in the area and using a kind of a macro encapsulation kind of a technique to go ahead and use minimum amounts of material and that kind of a thing and what we have is applicability maybe way down the road and we have those types of things that we just want to encapsulate for some reason or another but for Silo 3 material we don't see this as an appropriate technology.

So, that's kind of it and that is what's out there. Basically what we are -- we more or less come to an initial conclusion based on primarily the development stage that these things are, the

applicability that it might have in providing the waste form that you want to go with. So going through there, we see three things that are out there. One is the cement like stabilization solidification process and there is a wide variety, not just one, but quite a few. There are probably as many as there are vendors out there that are willing to stabilize this particular material and polymer encapsulation aspect that we can take a look at. We suffer from the standpoint of not really clearly understanding the difficulties and what they might be to scale it up to process this amount of material and that is the same thing with the sulphur polymer encapsulation aspect. It's a nice waste form but can we really scale it up to that particular activity and get this particular job done. So, those are kind of the three that we think will need during the initial screening aspect. One is going more or less, going forward and sharing a lot more detail on how these processes really work, what is really available and get you a little bit more comfortable and us a little bit more comfortable in some areas as to what these things are. That is kind of it in a nut shell and that is kind of where we're at. Any questions?

MS. YOCUM: On the cement stabilization, it

says produce the secondary waste and it is called in the hepa filters --

MR. PAINE: Yeah, it is dust and --

MS. YOCUM: Okay, what I -- then on the polymer it says produce secondary waste --

MR. PAINE: Yeah, it had to be the plastic. It gets gases and will trap them, just like it did the gases that is coming off the vitrification. We'll go ahead and deal with that and -- that's one of the down sides of this --

MS. YOCUM: Yeah, that's what I'm concerned about, just wondering how they were going to be handled.

MR. PAINE: Very carefully I can assure you if we go to that kind of process.

MS. YOCUM: Okay, would it be better if you would show how they were going to be handled to give us an idea --

MR. PAINE: We're going to get into intimate detail on some of these points next time that we meet or we get together. Tonight was to go through everything not in a lot of detail because that would be too much.

MS. YOCUM: True.

UNIDENTIFIED LADY: Okay, it's just one of

the things (inaudible).

MR. PAINE: It was just one of the things that I thought I was going to have the most difficulty with and it actually is the least amount of difficulty with it. We thought we would experience a lot of problems and we might have to call and deal with some of the subjects with sulphur, but, that is really part of the process that really has worked pretty well for us. The only problem we have is the moisture and that would primarily, because of we did not have a lot of environmental control with the off gases, but you know, those things can be worked around. Yeah, the off gases are primarily emergency and the off gas system really worked like a dream for us. That was a good thing. Not a bad thing. That was a good thing.

MR. CARR: I have some questions about sulphur. I was talking about sulphur encapsulation.

MR. SCHNEIDER: Ohio E.P.A.

MR. CARR: I was just wondering about the off gases from the sulphur encapsulation. It's not a very good thing to be generated in the secondary waste group and also talking about the final -- (inaudible).

MR. SCHNEIDER: Right, and that is why I said it was a very sophisticated type, kind of a computer system that really controls the process with

redundancy, obviously, because you are dealing with that moulton sulphur and you're going to get some of those things off. It's not always going to happen and it is not operator friendly. That's the down side. You are correct.

LISA CRAWFORD: So basically we have drug it from all of the technology --

MR. PAINE: No, I didn't say that.

LISA CRAWFORD: I don't see that, it's not anywhere in here.

MR. PAINE: Well, let's talk about that a little bit.

LISA CRAWFORD: You don't have a piece of paper in there with the breakdown of the process and effectiveness and --

MR. PAINE: Well, the reason I did it, to be honest with you. We had so darn much information and really the request was, you know, we were looking at other stabilization things and people were not as familiar with that. You guys are pretty darn knowledgeble of what we are dealing with with the vit so I thought the majority of people would know that one, but we will take the vitrification thing --

LISA CRAWFORD: I just want to make sure that we have laid our cards on the table here. The

vit is still, could be one of the technologies that we may go back to.

MR. PAINE: Could be.

LISA CRAWFORD: Okay, I just want to make that real clear.

MR. PAINE: It's still a possibility.

THE COURT: It is right up there, it is the current rod, correct? We certainly know that there are difficulties in it and it's going to be a difficult thing to do in Silo 3 with those sulphur concentration in and we do want to be honest about it. That is the difficulty. We talked to the glass people and everything else and you know, the problem with the sulphates is when we get even in Silo 1 and 2, those are difficult. We did the Silo 1, 2, and 3 and we did make good glass and stuff but we shared all of the you know, the little foaming problem and everything else can be pretty tenuous for us. You have to control that foaming, otherwise it is kind of like a washing machine. Have you ever gone to the laudromat and you add a little bit too much and you had stuff coming out over the place? Now, that's kind of the situation you've got to control in those kind of sulphate levels, most of the -- everything else, you have to stay away from it.

MS. DUNN: We realize that. And when we talk through this and now I just wanted to clarify that and make sure that because that is the present technology like now.

MR. PAINE: Sure. Yes, and one thing that we're doing to address that is that we're doing this market survey that we talked about where we are bringing in all the vitrification records and we want to sit down and talk with you about some of the problems that we had with the vitrification and see how it can get around it to give us some sort of confidence, that there is something out there to deal with, particular problems in the particular waste form. But, it is a technical challenge, there is no doubt about it. All by itself.

UNIDENTIFIED MAN: Do you have an overhead that you can go through it for us and walk through the vit -- I think when you stack it up against these, the cost is --

MR. PAINE: Oh, the cost is definitely higher. There is no doubt about it. There is quite a bit of further development really to come up with something applicable to utilize it for, there's no doubt about that. The advantages, those are the disadvantages. One, it is very technical, it is very challenging all

by itself. Without somehow trying to eliminate those sulphates, cost wise it's definitely going to be bigger and better. The polymer site, it does get the volume reduction that we talked about. That is a big plus associated with it.

MR. SCHNEIDER: It probably would not for Silo 3, you have to delete for the sulphate --

MR. PAINE: Well, that's correct. You have to do that. It depends. You know, how much you have to dilute it, how much an additive you have to use to control that. We are doubtful and we control with the 1,2,3 blank and stuff and we reduce, you just keep feeding it all the time. We put some in there and let it stay in there, we added what we call deductives or the urea, whatever it was so we would get the, so that it would revolve out of there and add more volume to the stuff. We do all of those things with the low concentration aspects of it. You get up to these concentration and you are just adding more of that stuff or slowing down the process and making a huge melter and our problem is, that is one of our problems with the vitrification is that you just, the size of the vitrification unit and stuff out there, they are all _____ the site that we use out of the vit in which we require pretty much the considerable

scale of that if we are going to do this in any kind of a time frame. Those are kind of the down sides but you know, these other things that we have to deal with, if you can take that forward and maybe somebody has a good idea as to how we can take that forward and do it by ourselves.

MS. YOCUM: This is a question more for EPA right now and there's more into what we discussed earlier but when does the ESD begin? Does it begin after we have set down and had several workshops and decide on what alternatives there is or does it start now?

MR. SCHNEIDER: I think we are looking on it, are you talking about the document, there's a written document --

MS. YOCUM: Yeah, instead of the words opening up the rod, we will use ESD, okay? Now, because ESD is not supposed to be, because you are not using vitrification and so that is why vitrification is not up there?

MR. SCHNEIDER: I think in answering you, using that, I think we are to the point that there is a list of different vitrifications and you know, looking at the opportunity there is other options that may look that you may want to look at all those

because of the difficulty of when does the process start. I think as Don said in reality part of it started tonight to come forward. I think the techniques that we have chosen will be this ESD and that document will be submitted. We have several meetings that we're talking about and options. We will meet this document's development to look like a feasibility study and I think somewhere in that fashion and now Terry has a time line of the goals that are going on and they will probably delay summer or early fall in that time frame when this document will be available and things like that.

MS. YOCUM: Okay, so in other words, in fact, making a decision for what the other alternatives will be say we have to make them first before you can actually put the ESD into action?

UNIDENTIFIED MAN: I think what we're trying to do is get a feel from you on the technology. Vitrification is one that we all know about but we also know there is a lot of problems. Don said it makes glass, but your vitrification and the money, there are a lot of problems and that will be the question and other facilities and so we are here to look at that, all of that, these other options and carry out this and if there are ideas that come out

that we can look at together and work at together with the, and the options and ultimately reveal the ES documents and compare it and --

MR. PAINE: And remember, the original reason we were really going with the vitrification is primarily because it is a very high rate of concentration and made a very nice waste form and glass is a good waste form, you know, especially, and that was a big drive. This Silo 3 material, you know, things you might want to consider it, _____ like somebody said (inaudible). There are three waste categories I had class C area and I stabilized it with a cement stabilization process and a table like that, that would be the compacts and materials that we're talking about in Silo 3. They will be greater than that stuff and then I went through some very arduous chemical extractions -- (inaudible) you know, six hundred degrees and pack it up in special containers and send it and meet all the risk criterias and set it down there. The process that you would normally utilize of transferring that type of material is just a stabilization type process.

UNIDENTIFIED LADY: That is not my question.

MR. PAINE: I know that, but I am trying to say the material in Silo 3 is not much, any different

than a lot of stuff that we are shipping out and --

MS YOCUM: Fine, but at the beginning it was and it was going with 1 and 2 and at the beginning it was and if we still see that the vitrification, it is possibly a way to go. Then there is no need for the ESD and so I am saying when so, does the ESD start while we're trying to make a decision on an alternative and what if for some ungodly reason we all decide vitrification?

MR. HAGEN: Let me go back to reiterate I think something that was said, it may not have been emphasized. As it was said, there were four stages of the process and the first one is what we are starting tonight. Included in the statement it is part of the mix starting point. We are going to do, some to a consensus on what topology we are going to use or perform many requirements that we are going to use. Before we go to the next phase and the next phase was modifying the rod and I said I presume it would not be a vit. If it is not vit, that means you've got to notify the rod. If it was vit, I don't think obviously from a silo perspective it would require a modification so I think to answer your question is we're not going to put an ESD out for review during this process.

MS. YOCUM: Okay, thank you.

LISA CRAWFORD: I have an answer. Most of them I think we would put a big X through except for these three, to be honest.

MR. PAINE: We think alike. I keep telling you this.

LISA CRAWFORD: Is there anyway somebody can come back to us and I mean 10-500% volume increases is really a lot, a hell of a lot and that --

MR. PAINE: Right, and that is the wide variety. That is what the down side is. For the Silo 3 material, we are looking at the 20% range.

LISA CRAWFORD: I think we need, if we're going to go through this process, then I think we need to see the 20% volume increase and if I move to the next page, polymer encapsulation volume increase or decrease unknown, somebody not only needs to take that step and go find out which one we're talking about and how much --

MR. PAINE: That is right and that's what we want to do in subsequent meetings is to sit down and talk about -- on the waste form that we've already done what kind of volume increase or decrease they get.

LISA CRAWFORD: And I think there

was some sort of comment in capsulation, it says volume increase. I am at a stage now where if I have to look at these and maybe this is something we are going to do at the next meeting but we're going to have to have more specific, thick, you know, 10-500% range is, I cannot deal with that. I need something far better than that.

MR. SCHNEIDER: I assume you'll get that throughout the EPA.

MR. PAINE: That's out of the EPA guidance document, not the Silo 3.

LISA CRAWFORD: I just want -- the next step is actually to begin to go through some of these out and actually begin to look at these three or four or five or however many there is going to be. You will have to have more specific detail regarding each one and than just $10-$1500 per range.

MR. PAINE: I agree with you and that was kind f what I had envisioned doing. Pam?

MS. DUNN: At some of these meetings, are we going to talk a little more indepth about ESD versus rod amendments, because I am having real problem with the fact that you have a 20% increase in volume and potentially change the treatment from a rod and say that that is just a significant change in the ESD but

yet you are talking about potential rod amendment for one or two over cost, I mean, to me if you change preferred treatment alternative and you're looking at 20% increase, that is a fundamental change to that rod and would that still be a rod amendment? I mean, I don't know how costs can be a fundamental change but an increase in waste and potential, if we do change treatment it would be an ESD and not an amendment. I just don't understand that.

MR. SERABY: Jim Seraby, Pam, Jim Seraby, by way of that type of nature given an example here, if you have, if you were going to dig up materials and fill up disposable cells and you had a soil bound increase like 20% or 10%, in that range, more than you would anticipate, that would not be considered that fundamental change by some of the examples that we have given or guidance that we got so it would be consistent ESD from what we look at, that would be the sort of thing that we are looking at. I think, you know, when you look at vitrification, Pam, I think in the reality for what we know for Silo 3 and in looking at the volume, I think that the volume increase to enable to treat this material, it is some consistent rate into handle the sulphate problem, I think we are looking at significant volume increases and there will

be numbers thrown out, you know, that Don has shown us at other meetings and the numbers are percentages of volume increase and would go up about 20 or more times, ten times as much.

MR. PAINE: If I took the standpoint you wanted to get the sulphate later down to that 51% range, you have significant avenues you have to put in.

MR. SERABY: Where your volume would go up ten times I think.

MS. DUNN: What about the change in the treatment. I think if we change to vit for a stabilization, whether cement or polymer, that's a fundamental change.

MR. SERABY: I think that all falls into the same stabilization category of technology and vitrification essentially, when you are vitrifying, you are stabilizing the waste form amount. The cementation, you are stabilizing the waste form all in the same technology group as opposed to stabilization and there is one chemical extraction which would be another type of technology in consideration and another type that is not used and that is another technology group. What I am saying Pam was vitrification and cementation or polymer micro

encapsulation are all forms of stabilization technology and that is why we said that there like in that way.

MS. DUNN: So why the costs and potential for a rod amendment instead of the ESD when 1 and 2 is involved?

MR. SERABY: Because the cost of the six-fold increase cost that has been presented is something that is shown to be fundamentally there. That is one of the factors that we have to look at, just like the other activities and that six-fold increase in cost will presume in if we did not call it a fundamental change or do away with the rod amendment and that again would, where we would go and make the change or save the cost and any _____ it should be grounds for a rod amendment. It was a cut and dry decision, you know, that the cost may be double, it may not be an issue. The ESD, but the fact that it went up six times, you go from $100,000,000 to $600,000,000, it's cut and dry. We have to do a rod amendment for that.

MS. DUNN: Could that be bad nationally to change treatment alternatively and only do it in ESD?

MR. SERABY: It is consistent with what I think has been done, in other cases where they have changed

certain technologies and down in the same categories and down in ESD and there are a lot of documents that we have looked at and similar to that, what we've done and that is what we followed, Pam.

MS. DUNN: But what will change all this out --

MR. PAINE: In the next meeting, you know, Jim will be happy to sit at a table with you and look on Saturday, sit down and talk to you more about this and show you what he is talking about more.

MS. DUNN: Well, I still think that's a serious question, the cost and --

MR. WILKE: Gene Wilke from the task force -- this is a substantial change in direction of understanding the materials that you have laid out there. On the overhead that characterizes the material where you got the Silo 3 waste and the characteristics, there are two things that I have a question on. One is that I thought that lead was a substantial component in Silo 3.

MR. PAINE: No, lead is in 1 and 2. The only reason we are stabilizing 1 and 2 is because of lead, that's the only reason.

MR. WILKE: In the last column, radiologically the terminology can be contact handled, it seems that

that needs a little more explanation.

MR. PAINE: Okay. Meaning contact handled, it is down around the 5-10 MR per hour kind of thing and if I can get up close to Johnny here and I can handle it effectively, you know, but I can get next to Stephanie here and I want to get a whole lot farther away. It is a lot higher exposure aspect thing.

MR. WILKE: So you are looking just at the amount of radiation rather than the form because the principal concern with that is it is a finely powdered and insulation is different.

MR. PAINE: Yes, I'm only using it with external exposure to radiation, you are right. When we get up close and personal with it, we are going to be making sure that it does not get inside of us. That's the difference with Silos 1 and 2, that is not contact handling. You don't get up next to --

MR. WILKE: I don't want to make a big deal, but it looks like that would stand a little more explanation for the stuff.

MR. PAINE: Yes, I agree. I was not thinking about it in that beam, but you are absolutely correct. That can be confusing.

LISA CRAWFORD: I understand this ceramic concept but I do have a question about it. I

put a big X through and I still have a question about it. It says developmental technology. Can you give me some kind of example of what they are doing in ceramic --

MR. PAINE: A lot of this has been done on like one gallon or five gallon waste thing and they have been dealing with from that standpoint. They have done it on a large scale, but it really is kind of a neat little technology. I mean we have had presentation from the folks that developed it and in just a week or so ago, I thought you guys were going to come to and couldn't make it. The ceramic thing has always been kind of bad because we had to use the big kiln and all that kind of stuff but this is a little unique kind of a way in which they took the magnesium and found a way to get rid of the phosphoric acid and just --

LISA CRAWFORD: We have not really done like a major --

MR. PAINE: No.

UNIDENTIFIED MAN: Actually they are doing --

MR. PAINE: Yes, the 55 gallon drum. Around a 55 gallon drum.

MS. DUNN: Just like a 95 meeting you are

talking about. I am just curious.

MR. CLAUSEN: I'm Marvin Clausen, I wonder, you say that the waste has got a leachability, are you talking about the container dissolving and then reaching into the ground or why do you have to prophesies it to stop leachability?

MR. PAINE: Well, leachability, what you want to have it we have certain limits that were established way back after the 70's and early 80's and those kinds of things for certain characteristic metals and stuff by the EPA and so that, you know, these things had to be on a certain concentration limit, you know, the waste form itself, you know, what we will do is we will take the waste form and you go ahead and it is kind of like an acid rain kind of test aspect for all practical purposes because what you're really concerned about is once you put the stuff in the environment you got these natural kinds of, you know, acid rain or water or whatever has been infiltrated through the waste and then you have the potential to take it to ground water or maybe take it up to the waste and then to the surface and disperse it, those kinds of things, so in order to make sure that that did not happen and that these materials were disposed of in land and that would take 1,000 or

10,000 aspects of it. They wanted that stuff in soluble form so that over time and everything else, but for some reason that came into contact with mother nature's natural stuff and it would not be in a form which you can be mobilized and say ground water can be put on ground and by people and that is the -- so from that standpoint to ensure that protective over the long term process.

UNIDENTIFIED MAN: (Inaudible), based upon the fact that we'll go into a landfill, solid waste landfill, that generally operates (inaudible) that is the basis for using the acid bleach. (Inaudible) and regardless of the inaudible waste form is taken so if we had this nice cement or vitrification or polymer and the 200 cells prevent inaudible is the waste content not take into account, but there is the solid waste -- (Inaudible) protective process and that is why we -- (inaudible) you take that waste form and that is basically it.

UNIDENTIFIED MAN: Mr. Wilke, we are the -- whatever waste form we have to meet those and --

MR. PAINE: Yeah, I'm going to put it in that waste form and pick samples out and bring it up and everything else and go through that test and they better be below that or I'm going to have to redo it

again.

UNIDENTIFIED MAN: Is there any cementation operation in the United States --

MR. PAINE: Oh yeah, lots of them. We have done two or three cement stabilization projects on Silo 8 with similar types of materials and vitrification, the status of the vitrification right now, we have two facilities that we are operating, one in _____ and _____ for high levels and we had a facility that was operating in an area down at Riverside most recently that we have had a problem with the melter so they're going to go through and replace the melter and put a new melter in so that will take about a year before they are back up and operating. It made about the same amount of glass, but their glass was radioactive glass (inaudible).

UNIDENTIFIED MAN: Yeah, it took ten years and a billion dollars --

MR. PAINE: That's one of the concerns that we had with the vitrification process is that it has a history of a lot of developmental -- to get it where it is today and that's one of the concerns that we have. How do we get something out there that we can predict and assure ourselves that there will be some

degree of stability. This is developmental technology in any way, shape or form. It is very much in need to the waste form that you got and certainly waste forms that you were dealing with is must more benign than what you are trying to get to solid material. It certainly did not have the chemistry aspect and sulphate and lead and all that kind of stuff that we are trying to deal with so those things concern us when those things are happening, you are right, it took a while to get this technology working. I can remember back in the late 70's when we started that vitrification back in there and it came on line last year.

UNIDENTIFIED MAN: (Inaudible) but they did not stay very long.

MR. PAINE: No, and there is other vitrification across the world. What we're talking about here is really tripling the capacity or vitrification in the world by the process that you might put it right here. That's the nice thing about the highlight stuff when you take the really hazardous stuff and distract it out of the rest of the material and then they vitrify that and you take the rest of it and use some other stabilization. Before you had a much friendlier type of waste to deal with. They are

trying to take the whole packet which is a nice concept and develop into waste form, but it is, it's a challenge.

UNIDENTIFIED MAN: And you're talking about mixing and putting it in a barrel, putting the mixture in a barrel and it solidifies while it's in that barrel and you just put the cap on it --

MR. PAINE: More or less.

UNIDENTIFIED MAN: Well, it seems like that would be pretty simple.

MR. PAINE: That's the positive side of those kinds of technologies. They are relatively simple processes. You know, your equipment is simple and that's the advantage of those kinds of things. You know, that is why the cement stabilization type of thing took off, because all of the additives and everything else are really pretty cheap and the equipment you are utilizing and stuff is not expensive so those are the advantages. (Inaudible).

MR. PAINE: Yeah, I've been to that facility about six years ago. That is a very fine vitrification facility.

MS. DUNN: They are doing low levels --

MR. PAINE: No, well, since I been there, they may have tried to apply it to certain other things,

but (inaudible) primarily high levels.

MS. DUNN: They do have a lot of problems with that.

MR. PAINE: They had a lot of problems. It was a beautiful facility, I was really impressed with it. They did not have an easy time getting to that point, but they got there and they were successfully and a lot of dollars -- nice facility.

MS. DUNN: One other question, so many meetings on this, but there was some discussion about making this silo with the waste pit to look on it down to Environ Case, was that just something hypothesizing or is that a potential that we are going to look at in this process or I mean, the --

UNIDENTIFIED MAN: That cannot be considered.

MR. PAINE: Not considered treatment -- you're not doing anything, kind of the old term that they seem to use a lot but you are doing absolutely nothing with the stuff in there to reduce the pollution ability or --

LISA CRAWFORD: I have been sitting here making a needs list. We talked about having cement 101. You know, we have discussed that, we need a chemistry 101 class and also a plastics 101 class. I

mean, for lack of a better word, I am assuming that polymer is similar to plastic.

MR. PAINE: Yeah, you have cement like stuff and you got plastic and a combination of both.

LISA CRAWFORD: Okay, this might be -- if we walk through this process, that we talked about, this might be helpful to help some of us understand and maybe there can be an example to kind of go along with these things, good examples and bad examples --

MR. PAINE: It would be nice if we could show you pictures and maybe what the farm looks like.

LISA CRAWFORD: That would be all right. I'm not trying to be nasty here, but that's the vision that we have in our head right now. The ground falling apart and -- inaudible or whatever in the hell it is. We need good examples and bad examples. There may not be any good examples. If they're not, fine, you can tell us and the other thing (inaudible). We keep hearing this $600,000,000 figure for vitrification. I have asked before and I will ask again, where is this number coming from. I have heard $72,000,000 and then we heard $92,000,000 and then $400,000,000 and now we are hearing $600,000,000. I don't want to sound like a smart aleck here, but show us the figure, show us where this came from. Show me

the money.

MS. DUNN: If we had chemistry before cement and plastic --

MR. PAINE: Yeah, that would be nice.

LISA CRAWFORD: It kind of flows into one another.

MR. PAINE: Got ya. Make a note of that.

UNIDENTIFIED MAN: Does Willow Springs successfully --

MR. PAINE: Who?

UNIDENTIFIED MAN: Willow Springs, are we getting any feedback from them?

MR. PAINE: Yeah, and we'll show that. Any technology as to --

LISA CRAWFORD: That's all we've heard.

MR. PAINE: Yeah, unfortunately the last thing you remember and I think there is a lot of good examples and there's a lot of bad examples in almost any technology that you can look at. Variety of different reasons.

LISA CRAWFORD: There is always a potential for it to be a good or a bad example.

MR. PAINE: Yeah, I think we can do that, make that part of the record and you can talk pretty knowledgeable about why it did not work. The

technology took a hit when it was more process control. The thing about the cementation process you have a very good process quality control to go through this, you decide to get innovative and you decide and say, I'm going to, you find many ways to try basic process control stuff and then you get a rocky place and --

LISA CRAWFORD: And I guess going into discussions, that is kind of how we feel, why we are in the situation we are in with the stuff. Quit, move, building -- we don't need to list all of the bad things that happened. As we move into the new technology here, I would really hope that showing all those things are the foremost in people's mind, that if we're going to do it, we need to make sure we are doing it right the first time. We are not doing this right to save money and save time and get it done and get it out of our hair.

MR. PAINE: No, we're going to do it right or we're not going to do it at all. My dad used to tell me that all the time.

GARY CRAWFORD: It is attracted to me the process of decrease the volume and a process if it is not listed up there, has it been totally eliminated or can it still be considered?

MR. PAINE: No, anything can be considered.

GARY CRAWFORD: If you could include the good example and bad example of the Phoenix Ash Technology because it seems to me to be a reasonable process and on the view that it decreases the volume because I agree that what was said about the decrease in the volume because what you've got up here, all those increase the volume.

MR. PAINE: There are 3 ways to get rid of volume and you will see a lot of technology that will say you get a volume decrease. There is only three ways to get a volume decrease. Okay? It is wet and you get rid of the water, that is one way. A lot of technologies will take a wet waste and develop a process and somehow get rid of the water and something like that, that is one way to do it. You can do it the way we did it with vitrification where you take certain components and stuff that are in there and you are not really concerned about from a land disposal standpoint and you dry those off, like the sulphate phosphate carbonate, the vitrification so the prost does not present and you don't get -- but the other way that you get volume reduction is that they add an additional step and they use a mechanical compression. Got a material that can make more dense, then you make

more dense but most of the actual process is adding something so the normal way they're going to tell you that they get this volume reduction is not necessarily that the process that they are using to fix the material but it is one of these other mechanisms. That is the only way you can get volume reduction. So that's why I'm saying, when we take our particular material it is not wet, it is dry. You're not going to get anything wet. It does have a potential because it is fluffy and maybe can be made more dense in the process where you can get it and then unless you went to some sort of a process such as very high temperatures kinds of thing to dry off some of these other things, you can't get it. So most of the techniques that we're talking about, I can tell you that the Phoenix Ash Technology, though I don't know much about it, what I do know about it is it's very much similar, so much that there is a mechanical compression step in there or something like that and they may not get, they may have to add a little additive say to one of those other things but there will still probably be some volume increases.

UNIDENTIFIED MAN: You can really have a problem trying to minimize your gross substance and we are trying to minimize the gross but it's hard to come

up with a viable form.

MR. PAINE: Right. You've got to balance all these things and from the looks of it, you're fly ash kinds of things, it doesn't look very -- but I imagine what it has in there is some sort of decompression stage where they have a material where they get rid of the water and compress it out. They can't be doing it with a fly ash or volcanic ash or kiln, that is not normal. That has no prayer so they cannot get a volume reduction so they've got to be doing something else to it.

MR. STEGNER: Do we want to try to set a date for the next meeting tonight? What about the 12th of June?

LISA CRAWFORD: No.

MR. STEGNER: That's right, I forgot. That's your road show. I knew there was something on that date, how about the 17th or the 19th?

LISA CRAWFORD: No. How about the 16th, what about a Wednesday?

MS. DUNN: The 16th sounds good.

MR. STEGNER: June 16th is a Monday, all right. We will send out announcements to everybody, probably so. If we're going to have this many people come I would say we probably will have it here.

(At this time there is discussions about the next meeting that were off the record.)

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The meeting was concluded at 9 p.m.